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In Reply Refer To:
000194RO

BIOLOGICAL OPINION SUMMARY

EFFECTS OF THE NATIONWIDE WILDLIFE SERVICES PROGRAM ON THE JAGUAR

Date of opinion: May xx, 1999

Action agency: Wildlife Services of the Animal and Plant Health Inspection Service

Project: Nationwide animal damage control activities

Location: Southwestern United States is the area of concern for the jaguar.

Listed species affected: Jaguar (*Panthera onca*)

Biological opinion: Nonjeopardy

Reasonable and prudent alternatives (RPAs): *Implementation of one of these RPAs is necessary to remove the likelihood of jeopardy from the proposed action.* None.

Incidental take statement:

Anticipated take: *Meeting or exceeding this level may require reinitiation of formal consultation*. Anticipated take will be considered to be exceeded for the jaguar if animal damage control activities are directed at jaguars, or met if one jaguar is unintentionally trapped, injured, or killed.

Reasonable and prudent measures: *Implementation of these measures through the terms and conditions is mandatory.* Five reasonable and prudent measures address animal damage control activities that may adversely affect jaguars: minimize risk to jaguars, notification of WS operators, obtaining all necessary permits, investigation of reports of jaguar occurrence, and training of employees.

Terms and conditions: *Terms and conditions implement reasonable and prudent measures and are mandatory requirements.* Fifteen terms and conditions implement the reasonable and prudent measures listed above.

Conservation recommendations: *Implementation of conservation recommendations is discretionary.* Three are provided for the jaguar: suggested research to determine the distribution of jaguars and jaguar habitat, participation on the Jaguar Conservation Team, and providing education materials on the conservation of the jaguar.

AESO/SE
000194RO May xx, 1999

Mr. Michael V. Worthen
Animal and Plant Health Inspection Service
Wildlife Services
Western Regional Office
12345 West Alameda, Suite 313
Lakewood, Colorado 80228

Dear Mr. Worthen:

The U.S. Fish and Wildlife Service (Service) l[illegible] e document[illegible]s submitted on January 31, 1995, for formal consultation on nation[illegible]de USD[illegible] and Plant Health Inspection Service-Wildlife Services (WS) program[illegible]ctivities [illegible]at ma[illegible]he endangered jaguar (*Panthera onca*). This document repres[illegible]nts the S[illegible]vice's bi[illegible]gical opinion on the effects of that action on the jaguar in accordance [illegible] section[illegible] of the En[illegible]angered Species Act of 1973, as amended, (16 U.S.C. 1531 *et seq*[illegible] An Aug[illegible]15, 1997 biological opinion addressed the effects of WS activities on the endanger[illegible] ocelot ([illegible] *pard[illegible]s*) and jaguarundi (*F. yagouaroundi*) in south Texas. On May 27, [illegible] biologic[illegible] was issued which addressed the affects of WS activ[illegible] the end[illegible]exican gra[illegible]wolf (*Canis lupus bailey*) along with a conference opinion re[illegible]rogram a[illegible] the nonessential experimental population of Mexican gray wolf. An add[illegible]ological [illegible] currently in draft concerning the effects of WS program activities on the [illegible]d south[illegible] willow flycatcher (*Empidonax traillii extinus*) and its critical habit[illegible]

This b[illegible]logical opinion [illegible]on information provided in the request for formal consultation and [illegible]her sources of info[illegible]ma[illegible]ion. Literature cited in this biological opinion is not a complete bi[illegible]graphy of all litera[illegible]ure available on the species of concern, animal damage control and its e[illegible]s, or on other su[illegible]ects considered in this opinion. The administrative record regarding [illegible]ation on the [illegible]guar is on file in this office.

C[illegible]ION HISTORY

WS requested initiation of formal consultation regarding the effect of its activities on the jaguar (as well as several other species) on January 31, 1995. The request included a description of methods used by WS. The Service responded to the request on March 20, 1995, and identified the Regional Office in Albuquerque, New Mexico, as the lead for the consultation. On August 14, 1996, the Service received a copy of the 1994 final environmental impact statement for the

WS Program. Each species under consultation has been considered in separate biological opinions, as referenced above. For the jaguar, WS reviewed a preliminary draft biological opinion and a meeting was held February 2, 1998, where WS provided additional project related details. During April and May 1999, discussions among the Service and the Arizona and New Mexico offices of WS resulted in the completion of the biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

A description of animal damage control methods used by WS was provided by W[illegible]ills, *in litt.*, 1995). That description is attached as Appendix 1 and is incorporated into this biological opinion by reference. The Service understands that this document includes a description of all possible methods that may be employed by WS. Methods that are not included in that description are not covered by this biological opinion.

STATUS OF THE SPECIES

The jaguar was initially listed as endangered from the U.S.-Mexico border southward to include Mexico and Central and South America (37 FR 6476, March 30, 1972; 50 CFR 17.11, August 20, 1994). As a result of a petition, the jaguar was proposed as endangered in the United States (59 FR 35674; July 13, 1994). In a Federal Register notice dated July 22, 1997, the jaguar was listed as an endangered species in the United States (62 FR 39147).

The jaguar is the largest [illegible] cat now native to the Western Hemisphere. Jaguars are large muscular [illegible] relatively [illegible] massive limbs, a deep-chested body, and cinnamon-buff in color with many [illegible] spots. Its [illegible] North America includes Mexico and portions of the southwestern United States (Hall 1981). A number of records of jaguars are known for Arizona, New Mexico, [illegible] additional reports exist for California and Louisiana. Records of the jaguar in Arizona and New Mexico have been attributed to the subspecies *Panthera onca arizonensis*. The type specimen of this subspecies was collected in Navajo County, Arizona, in 1924 (Goldman 1932). Nelson and Goldman (1933) described the distribution of this subspecies as the mountainous part of eastern Arizona north to the Grand Canyon, the southern half of western New Mexico, northeastern Sonora, and, formerly, southeastern California. The records from Texas have been attributed to *P. o. veraecrucis*. Nelson and Goldman (1933) described the distribution of this subspecies as the Gulf slope of eastern and southeastern Mexico from the country of Tabasco, north through Vera Cruz and Tamaulipas, to central Texas.

Swank and Teer (1989) indicated the historical range of the jaguar included portions of the states of Arizona, New Mexico, and Texas. These authors consider the current range to occur from central Mexico through Central America and into South America as far as northern Argentina. They stated the United States no longer contains established breeding populations which probably disappeared from the United States in the 1960s. They also maintained the jaguar

prefers a warm tropical climate, is usually associated with water, and is only rarely found in extensive arid areas.

Goldman (1932) believed the jaguar was a regular, but not abundant, resident in southeastern Arizona. Hoffmeister (1986) considered the jaguar an uncommon resident species in Arizona. He concluded that the reports of jaguars between 1885 and 1965 indicated a small bu[illegible]esident population once occurred in southeastern Arizona. Brown (1983) sugge[illegible]d the jaguar in Arizona ranged widely throughout a variety of habitats from Sonoran [illegible]esert sc[illegible]ard through subalpine conifer forest. Most of the records were from M[illegible]ean evergr[illegible]lland, shrub-invaded semidesert grassland, and along rivers.

The most recent records of jaguars in the United States [illegible]from Arizona. In 197[illegible] was taken east of Nogales and in 1986 one was taken from th[illegible]abezas Mountains. The latter individual reportedly had been in the area for about a year [illegible]was killed (Ron Nowak, FWS, pers. comm., 1992).

The Arizona Game and Fish Department (1988) ci[illegible] recent re[illegible] jaguars in Arizona. The individuals were considered to be transien[illegible]o. One of [illegible]e reports was from 1987 from an undisclosed location. The other re[illegible]t was fr[illegible]when tracks were observed for several days prior to the treeing of a jagu[illegible] by houn[illegible]s in t[illegible]alley, Pima County. An unconfirmed report of a jaguar at the C[illegible]onado N[illegible]tional M[illegible]rial was made in 1991 (Ed Lopez, Coronado National Memorial, pers[illegible]m., 19[illegible]).

In 1993, an unconfirmed sightin[illegible]of a jagua[illegible]s repo[illegible]d for Buenos Aires National Wildlife Refuge (Wi[illegible]m Kuvlesky[illegible] *in litt.*, [illegible]arch 1996, the presence of a jaguar was confirme[illegible]h photo[illegible]de in the [illegible]ncillo Mountains of Arizona and New Mexico (Glenn 19[illegible] Arizona [illegible]d Fish Department (James Burton, AGFD, *in litt.*, 1997) reported a jag[illegible]sighted i[illegible]quivari Mountains in 1996. In the fall of 1997, a jaguar was reported fro[illegible]rro Colo[illegible]ountains of southern Arizona (Bill VanPelt, AGFD, pers. comm[illegible])

Brown (1983) presented [illegible]sis suggesting there was a resident breeding population of jagu[illegible]s in the southweste[illegible]nited States at least into the 20th century. The Service (1990) re[illegible]nized that the jagu[illegible] continues to occur in the American Southwest as an occasional w[illegible]erer from Mexic[illegible] Currently, no known breeding population of jaguar occurs in the United [illegible]

In[illegible] jaguar's gradual decline was concurrent with predator control associated with the settlement of land and the development of the cattle industry (Brown 1983, USFWS 1990). Lange (1960) summarized the jaguar records from Arizona known up to that time. Between 1885 and 1959, the reports consisted of 45 jaguars killed, 6 sighted, and 2 recorded by sign.

Brown (1991) related that the accumulation of all known records indicated a minimum of 64 jaguars were killed in Arizona after 1900. When plotted at ten-year intervals, records of jaguars

reported killed in Arizona and New Mexico between 1900 and 1980 demonstrated "a decline characteristic of an over-exploited resident population" (Brown 1983). Brown (1983) argued that if the jaguars killed during this period originated in Mexico, the numbers of killings should not suggest a pattern but should rather be irregular and erratic.

Bailey (1905) listed seven reports of jaguars killed in Texas between 1853 and 19[illegible]. Schmidly (1983) reported another jaguar shot in Mills County in 1904. Taylor (19[illegible] mentioned a jaguar killed near Lyford, Willacy County, in 1912. Brown (1991) indicated [illegible]ere common in Texas until 1870. The last reports from Texas were of individuals killed [illegible](San Benito, Cameron County) and 1948 (Kleburg County). Nowak (19[illegible]5) identifi[illegible] kill[illegible]guars for commercial sale of their furs as a factor in the extermination of a substantial re[illegible]ulation in central Texas during the late 19th century.

Brown (1991) did not believe the jaguar was extirpated fr[illegible]n Mexico. Although jaguars were considered relatively common in Sonora in the 19[illegible]s an[illegible]he cited the most northern officially reported population as about 800 miles south of the Un[illegible]-Mexico border. However, Brown suggested there may be more ja[illegible] Sonora th[illegible]ficially reported. He mentioned reports of two jaguars which were l[illegible]l Sonora a[illegible]und 1970. He also discussed assertions by the local Indians tha[illegible]oth ma[illegible]ale jaguars still occurred in the Sierra Bacatete. Brown speculated that if reproducing p[illegible]of jaguars is still present in these mountains, it may be the source o[illegible]individu[illegible]s which [illegible]er northward through the Sierra Libre and Sierra Madera until they [illegible] Arizo[illegible]. Nowak [illegible]ers. comm., 1992) reiterated that as late as 1987 the species was still [illegible]nsidered [illegible]mmon in [illegible]e Sierra Bacatete near Guaymas, Sonora, which is about 200 mile[illegible]outh of [illegible]ona.

Brown (1[illegible]eported b[illegible]from Mex[illegible]said that at least two jaguars have been killed in Chihuahu[illegible]. Nowak[illegible]mm., 1992) claimed that jaguars were still regularly present along the Sou[illegible]na River[illegible]Tamaulipas, which is about 150 miles from the southern tip of T[illegible]also hyp[illegible]ed that jaguars may be entering Arizona from Mexico due to habitat[illegible]Sonora. [illegible]arge stretches of natural forest were cleared in central Tamaulip[illegible]. In Arizon[illegible]rast, jaguar prey populations have increased, and large tracts of brush[illegible]d canyon woodl[illegible]still available to provide cover for jaguars.

Al[illegible]ugh the demand fo[illegible]jaguar pelts has diminished, it still exists along with the business of il[illegible]l hunting of jagu[illegible]s. In 1992, the Arizona Game and Fish Department personnel infiltrated a [illegible]f wildlife pro[illegible]ers which resulted in the March, 1993, seizure of three jaguar specimens of [illegible]was[illegible]gedly taken from the Dos Cabezas Mountains in Arizona in 1986. Two of the sp[illegible]been covertly purchased from the suspects for $9,000. During the investigation, several ties to Mexico jaguar hunting were discovered. Hounds bred and trained in the United States were sold to Mexican nationals for the purpose of hunting jaguars. Also, Mexican nationals prosecuted by the Service in 1989 for illegally importing jaguar pelts into the United States were continuing the practice of providing jaguar hunts in Mexico (Terry B. Johnson, AGFD, *in litt.*, 1993).

Actions that may affect the jaguar include clearing of habitat, destruction of riparian areas, fragmentation or blocking of corridors that jaguars may use, and any trapping or animal control activities designed to target the jaguar or other large predators. Such activities may also prevent jaguars from recolonizing previously inhabited, or otherwise suitable, areas. M-44 ejector devices with cyanide capsules used by WS to accommodate stockmen concerns over predator losses may be of threat to the jaguar (Terry B. Johnson, AGFD, *in litt.*, 1993). The jaguar may also be victims of traps targeted for other predators such as bears and mountain lions.

ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem within the action area. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the proposal under consideration.

The portion of the project area of concern, the southwestern United States, includes the specific locations where the most recent reports of jaguars in the United States have occurred. These areas include the Greaterville area, Santa Cruz River, Cabezas, Baboquivari, Peloncillo, and Cerro Colorado mountains of Arizona. This area was chosen to include some of the most likely area where jaguars would occur in the United States. It may be the area that is most likely to provide habitat that would support the existence of jaguars in the United States. The project area also includes the remainder of the Southwest (including New Mexico and Texas) where jaguars could possibly occur.

Loss of jaguars has occurred in the southwestern United States in the past. Such loss was addressed in detail in the Status of the Species section above. Such loss has almost resulted in the extirpation of the jaguar from the United States. Because the project area includes some of the most likely locations of occurrence of the jaguar in the United States, similar losses may be expected to continue to occur.

One biological opinion addressing effects to jaguars was issued by the Service on September 26, 1997. That nonjeopardy, programmatic biological opinion addressed the adverse effects that were associated with the Bureau of Land Management Safford and Tucson Field Offices' livestock grazing program. Several reasonable and prudent measures were provided in the opinion to address take of jaguars anticipated to be associated with loss of habitat and predator control activities.

Under the leadership of AGFD and New Mexico Department of Game and Fish, a conservation agreement and strategy has been prepared to address the conservation of the jaguar in Arizona and New Mexico. This agreement established an interstate/intergovernmental Jaguar Conservation Team under a Memorandum of Agreement. This MOA has been signed by various state and federal cooperators and local and tribal governments with land and wildlife management responsibilities in the geographic area of concern. WS is a signatory of this MOA. The Jaguar Conservation Agreement and Strategy serves as a mechanism for implementation of

actions for the protection and conservation of the jaguar, and will serve as a template for the recovery of the species until a recovery plan is prepared and adopted.

The Conservation Agreement established procedures for reporting and evaluating sightings of jaguars and compiling distribution and occurrence information, investigation of livestock depredation, evaluation of habitat suitability, development of education materials and other activities. The Jaguar Conservation Agreement also provides for participation by interested private citizens and organizations. Local ranchers have been active participants in these endeavors, working with State and Federal agencies to promote the conservation of the jaguar.

In March 1999, a workshop concerning the conservation of the jaguar was held in Mexico, hosted by the Wildlife Conservation Society and Universidad Nacional Autónoma de Mexico. One of the objectives of the workshop was to delineate and map priority areas for jaguar conservation efforts rangewide. These efforts included identifying the range of the jaguar in the United States as including an area defined by the "Sierra Madre Occidental Pinpeligo," those mountain islands in southeastern Arizona and southwestern New Mexico south of the Gila River. This area was ranked as "Conservation Priority Area 3," an area of overall low priority due to the low probability of persistence of jaguars over the long term as a result of various factors including habitat modification, urbanization and other forms of human-based conflicts.

EFFECTS OF THE PROPOSED ACTION

In the January 31, 1995, request for formal consultation, WS stated that control efforts directed at depredating mountain lions along the Mexican border have the potential to affect a transient jaguar. WS determined that the proposed action may affect the jaguar based on the use of hounds, neck snares, foothold traps and foot-hold traps for mountain lion control. No other analysis of effects to the jaguar were presented in the project description. However, as part of the WS commitments under the Jaguar Conservation Agreement and Strategy, WS completed an assessment of the risks associated with the use of M-44 ejector devices to jaguars (Fairaizl *in litt.*, 1997).

Although no analysis of the possible effects of methods to jaguars was presented in the documentation, the Service believes that the specific following animal damage control methods that were included in the project description (but also see the attached Appendix 1 as mentioned in the Description of Proposed Action section) could possibly adversely affect the jaguar. These animal damage control activities associated with the project could result in the direct take of jaguars.

Leghold traps are frequently used to capture animals such as coyote, bobcat, fox, mink, beaver, raccoon, skunk, muskrat, nutria, and mountain lion. These traps are the most versatile and widely used tool available to WS for capturing many species. Traps are effectively used in both terrestrial and shallow aquatic environments. Traps placed in the travel lanes of the targeted animal, using location rather than attractants, are known as "blind sets." More frequently, traps are placed as "baited" or "scented" sets. These trap sets use an attractant consisting of the

animal's preferred food, or some other lure such as fetid meat, urine, or musk to attract the animal.

In some situations a carcass or large piece of meat, known as a draw station, is used to attract target animals into an area where traps are set. In this approach, single or multiple traps are placed in the vicinity of the draw station. WS program policy prohibits placement of traps or snares within 30 feet of a draw station to prevent the capture of nontarget scavenging birds. There are only two exceptions to this policy. One is when setting leghold traps or snares to capture bears or mountain lions returning to a kill. In these cases, the weight of the target animal allows trap tension adjustments which precludes the taking of the lighter scavenging birds. The second exception is when modified leghold traps set next to carcasses are used to capture predators under Service permits.

Leghold traps provide two primary advantages. They can be used under a wide variety of conditions, and underpinned tension devices can be used to prevent animals smaller than target animals from springing the trap which allows a degree of selectivity not available with many other methods. Effective trap placement also contributes to trap selectivity. Another advantage is that nontarget animals can often be released.

Disadvantages of using leghold traps include the difficulty of keeping them in operation during rain, snow, or freezing weather. In addition, they lack selectivity where nontarget species of similar size to target species are abundant. The selectivity of leghold traps is an important issue and has been shown to be a function of how they are used. The type of set and attractant used significantly influences both capture efficiency and the risks of catching nontarget animals.

The use of leghold traps is costly program wise mostly due to the amount of manpower and time involved. The leghold trap, however, is indispensable in resolving many animal damage situations.

A variety of cage traps are used in animal damage control efforts. The most commonly used cage trap in the WS program is the box trap variety. Cage traps are usually rectangular in shape and made from heavy gauge wire. In the WS program, cage traps are often covered with burlap or a similar material to increase trapping efficiency. Covering the trap also provides the captured animal a greater feeling of security, resulting in reduced stress.

Cage traps are often used where other tools would be inappropriate due to a potential hazard to pets, wildlife, or people. Cage traps are well suited for use in residential areas. These traps are used to capture animals ranging in size from mice to deer, but they are generally impractical for capturing most large animals. Cage traps are not effective for capturing coyotes. Large traps made from culverts work well to capture bears in areas where a vehicle can be used to transport the trap to the site.

Snares, currently made of wire or cable, are among the oldest existing control tools. Snares can be used effectively to catch most species, but they are most frequently used by WS to capture

coyotes, beaver, and bears. They offer advantages over leghold traps by being lighter and not as affected by inclement weather.

Snares can be effective wherever a target animal moves through a restricted lane of travel (i.e., "crawls" under fences, trails through vegetation, den entrances). When an animal moves forward through the snare loop, the noose tightens, and the animal is held.

Snares can be employed as either lethal or live-capture devices depending on how and where they are set. Snares set to capture an animal by the neck are usually lethal, while snares positioned to capture the animal around the body or leg can be a live-capture method. They are particularly useful for the live-capture of beaver, as they are easily caught around the body and do not generally fight the snare. Careful attention to details in placement of snares and the use of slide stops can also allow for the live-capture of neck-snared animals.

The foot or leg snare is a nonlethal device activated when an animal places its foot on the trigger. When triggered, the spring activated snare tightens around the leg and holds the animal. Foot snares are used effectively to capture grizzly bears, black bears, and mountain lions.

The catch pole snare is used to capture or handle problem animals. Catch poles are primarily used to remove live animals from traps without injury to animal or danger to the WS Specialist.

A variety of immobilizing chemicals are used by WS to capture or sedate wildlife. Generally, drugs used in these efforts are to immobilize target animals already captured by another method. Nontarget animals (e.g., black bears) captured may be immobilized to effect a safe release. All WS use of chemical immobilizing agents is restricted by policy to employees trained and certified to standards established by the WS Drug Committee.

While leghold traps are suited for live capture, they are also used in lethal control. In these cases, the target animal is euthanized following capture. The method of euthanasia varies, but it is WS policy to provide the quickest most painless death possible to the animal. Leghold traps may also be set in "drowning sets" for aquatic species. In these sets, an animal quickly drowns after capture due to the trap dropping into deep water. Trap sets in these cases generally preclude nontarget captures.

A number of quick kill traps are used in animal damage control work. The Conibear-type trap consists of a pair of rectangular wire rod frames attached on both sides that close in a scissor-like fashion when triggered, killing the captured animal with a quick body blow. The primary advantage to using Conibear-type trap is that it quickly kills trapped animal, minimizing stress the animal might experience in another trap. The principal disadvantage of a Conibear-type trap is that nontarget animals are also killed, eliminating any opportunity of release.

The larger size of the Conibear-type trap (e.g., #330) is restricted in WS use to use in shallow water or underwater primarily to capture nutria and beaver. The smaller sizes (e.g., #220, #115,

#110) can be used in aquatic situations to capture nutria or muskrat, but they are also used in dry land sets for trapping skunks, weasels, rats, and armadillos. Safety must be considered when using the larger models as they can be hazardous to pets and children.

Snares set with the intention of lethal control generally result in a quick death for the captured animal. Animals not killed at capture by the snare are euthanized.

Shooting is selective for target species but is relatively expensive due to the staff hours required. Shooting is, nevertheless, an essential WS control method.

Shooting is an integral facet of predator calling. Trap-wise coyotes, while difficult to trap, are often vulnerable to calling. Shooting can be selective for offending individuals and has the advantage that it can be directed at specific damage situations.

Shooting from aircraft is a commonly used coyote damage control method. Aerial hunting is species-selective and can be used for immediate control where livestock losses are severe, providing weather, terrain, and cover conditions are favorable. Aerial hunting can be effective in removing offending coyotes which have become trap-shy and/or are not susceptible to calling and shooting.

Fixed-wing aircraft are useful over flat and gently rolling terrain. Due to their maneuverability, helicopters have greater utility and are more effective over brush covered ground, timbered areas, or broken land where animals are more difficult to spot. In broken timber or deciduous ground cover, aerial hunting is more effective in winter when snow cover improves visibility or in early spring before the leaves emerge. Aircraft are used to intercept and shoot coyotes at locations where they have killed livestock. Aircraft are also used in searching for coyote dens. This method may also be used to reduce local coyote populations in lambing and calving areas with a history of coyote predation.

Good visibility conditions are necessary for effective and safe aerial hunting operations; relatively clear and stable weather conditions are a necessity. Summer conditions may limit effective aerial hunting as heat reduces coyote activity and visibility is hampered by vegetative ground cover. High temperatures reduce air density and affect low-level flight safety.

Aerial hunting is most effective when ground support crews direct aircraft by radio to the general location of animals which have been located by eliciting coyote howls using sirens, calls, or imitated coyote howls.

WS aircraft guidelines have been implemented to insure that aerial hunting programs are conducted in a safe and environmentally sound manner and in accordance with Federal and State laws. Pilots and aircraft must be certified under established WS program procedures. Only properly trained and certified WS program employees are approved as aerial hunting crew members.

Aerial hunting is generally perceived by the public as being more desirable than poisons, since shooting is selective and results in quick death. However, there is an inherent risk to aerial hunting crews. Aerial hunting has a negligible effect on the environment.

Dogs are essential to successful hunting of mountain lion and bear. Dogs trained for coyote denning are also valuable in luring adult coyotes within shooting distance. Trained dogs are used primarily to locate, hunt, or decoy animals.

Denning is the practice of finding the dens of coyotes or red foxes and e[illegible] the young, adults, or both to stop ongoing and/or prevent further depredations on [illegible] usefulness of denning as a damage control method is proven, however, since locating dens [illegible] and time consuming, and den use is restricted to approximately two to three months [illegible], its practical use is limited.

Coyote and red fox depredations on livestock often increase in [illegible]g and early summer due to the increased food requirements of rearing and feeding pups. [illegible] of pups will often stop depredations even when the adults are not taken. When the adults are [illegible] and the den site is known, the pups are killed to prevent their starvation. They are either removed from dens by excavation and euthanized, or they are killed in the den with a registered fumigant. Denning is highly selective for the target species responsible for damage. Hunting for adult coyotes and fox and their young is often combined with other control activities (e.g., aerial hunting, calling and shooting).

Several toxic chemicals have been developed for use in the control of animal damage. Because of their efficiency, such toxicants have been widely employed. Since toxicants are generally not species-specific, their use may pose a hazard to some nontarget species. The hazards, however, are minimized when the toxicants are used with care by trained personnel. The proper placement, size, type of bait, time of year contribute to selectivity and successful control.

Most of the chemicals used by the WS program underwent a separate Section 7 Consultation initiated by the Environmental Protection Agency (EPA) which resulted in a March 1993 biological opinion.

The following section describes the chemical toxicants used in the current WS program that may adversely affect jaguars.

Sodium cyanide is used in the M-44, a spring-activated ejector device developed specifically to take coyotes and other canine predators. An M-44 consists of a capsule holder which is wrapped with fur, cloth, or wool; a spring-powered ejector mechanism; a capsule containing approximately 0.9 grams of powdered sodium cyanide (plus inert ingredients); and a 5 to 7 inch hollow stake.

To make an M-44 set, a good location is found where the hollow stake is driven into the ground. An ejector unit is cocked and fastened to the stake by a slip ring, and a capsule holder containing

the cyanide capsule is screwed onto the ejector unit. A fetid meat bait is spread on the capsule holder. A warning sign is placed close by to indicate that a device is present.

An animal attracted to a baited M-44 may try to pick up the bait in its mouth. When an M-44 is pulled upward, the spring-activated plunger propels sodium cyanide into the mouth of the animal.

M-44's are highly selective for canids because the fetid baits used are selected for their attractiveness to canids, WS Specialists are selective in their choice of placement locations targeting areas frequented by canids, and the M-44 device releases toxic into the mouth only when pulled upward while held in the mouth, a characteristic of canids.

Sodium cyanide is a fast-acting toxicant which, upon contact with moisture, either breaks down or is quickly metabolized. When sodium cyanide dissolves in water or water vapor, it quickly hydrolyzes into hydrocyanic gas and sodium hydroxide. Cyanide released into the air quickly dissipates. Cyanide which is ingested, kills the animal and is processed by the animal rendering it harmless to other animals that may scavenge the carcass.

The M-44 risk assessment to jaguars completed by Wagner and Waizl, *in litt.* (1997) reported that, for a four county area in Arizona and New Mexico, no fatalities (family member) mortality occurred due to M-44s during the five year evaluation period. The use of M-44s has not been wide spread, being used on less than one-half of one percent of this four county area in any one year. The use of M-44s in Arizona is only allowed on private land. The conclusion that there is relatively low risk of take of jaguars due to M-44s is attributed to the non-use on National Forest lands, the use of baits which are not attractive to felids, and the skills of WS Specialists in choosing set-sites.

Strychnine is a white, crystalline, bitter-tasting toxicant. It is very toxic to most mammals and birds with the exception of granivorous birds which are relatively resistant. Strychnine is often retained in the animal consumed by the animal and consequently may pose a secondary hazard to scavengers. All above-ground uses of strychnine are "temporarily canceled" as a result of a court order. The only use of strychnine in WS is for the below-ground control of pocket gophers.

The burrow builder, a trade-known mechanical device, dispenses measured quantities of pocket gopher bait underground in a simulated gopher burrow. The artificial burrows are constructed 20 to 30 feet apart, usually at a depth of 8 to 12 inches. Gophers intersect these artificial burrows, consume the toxic bait and die underground. Bait left in the artificial burrows is not readily available to nontarget species as few species access gopher burrows. Gophers which consume the bait and die are unavailable to scavengers due to their underground location. Thus they do not generally present a secondary poisoning threat.

Gopher damage is also controlled by hand placement of the toxicant in the natural burrow system. After the burrow is located using a sharp pointed probe, a measured amount of bait is poured through the probe hole, and the hole is sealed. All bait is applied underground and any gopher dying from the poison remains underground. In this method the availability of both the grain and the carcass is limited to nontarget animals.

Both methods of strychnine application are used in agricultural and forest areas where gophers are a problem. Strychnine was not considered in the March 1993 Biological Opinion issued to EPA.

Sodium monofluoroacetate (Compound 1080), has been widely used as a rodenticide since the mid-1940's. Prior to 1972, 1080 was also used in predacide in both drop baits and bait stations. Currently, the only registered, non-experimental use of this chemical in controlling predators is as the active ingredient in the Livestock Protection Collar. This chemical has been used as a predacide under Experimental Use Permits to control some local predator populations (for example, Arctic fox control in the Aleutian Islands to protect the endangered Aleutian Canada goose).

SUMMARY OF EFFECTS

The Service believes the effects described above are not likely to jeopardize the continued existence of the jaguar throughout its range.

Although the project area covers all of the jaguar habitat in the southwestern United States, it is a relatively minor portion of the total range of the jaguar.

CONCLUSION

After reviewing the current status of the jaguar, the environmental baseline for the action area, the effects of the proposed action and cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the jaguar. No critical habitat has been proposed or designated for the jaguar; thus none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits the take of listed species without special exemption. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of a listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with this incidental take statement.

The reasonable and prudent measures described below are nondiscretionary. Wildlife Services has a continuing duty to regulate the activity covered by this incidental take statement. If, WS (1) fails to require any applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7 (o)(2) may lapse.

AMOUNT OR EXTENT OF TAKE

The Service anticipates incidental take of jaguars will be difficult to detect for the following reasons: the jaguar is wide-ranging; it is difficult to find and observe; finding a [illegible]ed individual under some circumstances may be unlikely; and the species occurs in habitat that makes detection difficult. In addition, the nature of the predator control activities covered by this consultation could result in the direct take of jaguars which include harassment, injury, or mortality. The Service anticipates that, due to animal damage control activities, there will be an undeterminable level of take as a result of harassment and injury, and take of one jaguar as the result of direct injury or mortality.

If the incidental take authorized by this opinion is met or exceeded, WS must immediately reinitiate consultation with the Service to avoid a violation of section 9 of the Act. In the interim, WS must cease the activity resulting in the take if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species. WS should provide to this office an explanation of the cause of the taking.

NOTE: Any animal damage control activity under the program which are directed at a jaguar would be considered into take, and as such not authorized by this biological opinion.

EFFECT OF THE TAKE

In this biological opinion the Service finds that this level of anticipated take is not likely to jeopardize the continued existence of the jaguar throughout its range.

REASONABLE AND PRUDENT MEASURES

NOTE: For the purposes of this consultation, occupied range of the jaguar shall be defined by the geographic boundaries of the Sierra Madrean archipelago within Arizona and New Mexico and include all lands within the Arizona counties of Cochise and Santa Cruz, and west of Organ Pipe Cactus National Monument, Pinal east of State highway 77 south of the Gila River, and Graham and Greenlee south of the Gila River, and in New Mexico, Hildago County. Occupied habitat of the jaguar shall be considered to include all areas as defined by the occupied range with the exception of urban areas, and agricultural/grassland habitats which are further than three miles from the base of major mountain ranges and one mile from major riparian corridors. WS and Service will jointly develop maps to delineate these areas. If/when jaguar reports from other areas are substantiated, WS will coordinate

with the Service to redefine this definition of occupied jaguar habitat. Any proposed action involving use of non-selective control devices not specifically allowed through the Terms and Conditions of this biological opinion which may occur within the areas defined as occupied habitat of the jaguar would require a site-specific consultation.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental take authorized by this biological opinion.

1. All animal damage control activities of this program within the occupied range of the jaguar will be conducted in such a manner so as to minimize any risk to the jaguar.

2. All WS cooperators within the occupied range of the jaguar will be informed by WS of the status of the jaguar and the specifics of its protection under the Act.

3. All appropriate permits will be obtained prior to any predator control activities.

4. WS will investigate reports of any and all observations of jaguars or signs of jaguar presence in the general vicinity (50 miles) of proposed WS animal control activities which may affect the jaguar, in cooperation with the appropriate State wildlife agency and Jaguar Conservation Team. WS will provide the Service with a report of such investigations as well as any animal control activities conducted by WS within occupied habitat of the jaguar.

5. All WS employees that may be expected to conduct activities which may affect jaguars will receive adequate training.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, WS must comply with the following terms and conditions in regards to the proposed action. These terms and conditions implement the reasonable and prudent measures described above. Terms and conditions nondiscretionary.

The following terms and condition implements reasonable and prudent measure number one:

1a. Animal damage control activities which may possibly adversely affect the jaguar conducted by WS within the occupied range of the jaguar shall require identification of the target animal to species before control activities are carried out. If the identified animal is a jaguar, that animal shall not be subjected to any control actions, and the Service and appropriate State wildlife agency contacted immediately.

1b. Within the occupied range of the jaguar, leghold traps shall be restricted to rubber-padded (or equivalent) traps with a jaw spread equivalent to a #3 Victor or smaller. Trapping within occupied habitat of the jaguar shall only be conducted on a limited, case-by-case

basis. The Service shall be notified by WS prior to the use of traps within occupied habitat of the jaguar. All traps within occupied habitat are to be checked daily, and the WS Specialist must have appropriate equipment on-hand to release a jaguar unharmed.

1c. The use of neck snares within the occupied range of the jaguar shall not include occupied habitat of the jaguar, and shall be limited to agricultural/grassland habitats only, avoiding riparian corridors.

1d. If, within occupied habitat of the jaguar, a mountain lion or black bear is the offending animal, dogs will be a first choice if conditions are appropriate to take the animal rather than less selective methods of control. If a jaguar is inadvertently chased or treed by the dogs, the dogs shall be called off immediately once it is realized the animal is a jaguar.

1e. Foot snares shall only be used within occupied habitat of the jaguar on a limited, case-by-case basis. The Service shall be contacted by WS prior to the use of foot snares within occupied habitat. Foot snares shall only be used at confirmed mountain lion or bear kills at fresh prey remains. When foot snares are used in occupied habitat they must be checked daily, and the WS agent must have appropriate equipment on-hand to release a jaguar unharmed.

1f. The use of M-44s within the occupied range of the jaguar shall not include occupied habitat of the jaguar, shall be limited only to agricultural/grassland habitats avoiding riparian corridors, and shall be limited only with fetid meat attractants (which felids generally avoid).

1g. If the presence of a jaguar is confirmed in the vicinity (50 miles) of on-going or planned animal control activities, WS shall immediately contact the Service to review what activities are being implemented where, and if additional measures are necessary to protect the jaguar.

1h. If any WS activity results in the capture, injury, or death of a jaguar, the Service and appropriate State wildlife agency must be contacted immediately, and all WS activities using similar capture methods within the occupied range of the jaguar must be immediately curtailed while consultation with the Service is reinitiated. If a jaguar is inadvertently captured, the WS agent, using best professional judgement, should determine the condition of the animal (giving special attention to weather conditions, potential for heat stress, and any injuries) and if the jaguar is in eminent threat of further injury or mortality shall be immediately released. If the jaguar appears in satisfactory condition, the WS agent shall immediately initiate communication to the Arizona Game and Fish Department, Service, and New Mexico Department of Game and Fish as appropriate, to ascertain expected response time for personnel permitted to tranquilize and radio-collar the jaguar (as provided for under the Jaguar Conservation Strategy). If this response time would require the animal to be confined for a period of more than 24 hours, result in additional injury, or threaten its life, the jaguar is to be released immediately.

The following term and condition implements reasonable and prudent measure number two:

2a. WS cooperators within the occupied range of the jaguar shall be informed by WS by letter that take of jaguar, including harm, injury, and harassment, is prohibited under the Act and could result in prosecution. Also, provide information, as available, on the identification of jaguar sign, and other information regarding the conservation of the species.

The following term and condition implements reasonable and prudent measure number three:

3a. Any animal damage control activities authorized or carried out by WS shall be conducted only after all appropriate permits (e.g., Federal, State, or other) have been acquired.

The following term and condition implements reasonable and prudent measure number four:

4a. WS, in coordination with the Service and, if possible, the Jaguar Conservation Team and appropriate State wildlife agency, shall as soon as practical (within three days) investigate all credible reports of jaguars within the vicinity (5 miles) of any active animal control activities which may affect the jaguar. The investigations shall include appropriate field collection of data. WS is encouraged to coordinate these investigation with the appropriate State wildlife agency and Jaguar Conservation Team, and use the procedures for investigating observations and possible depredation by jaguar developed under the Jaguar Conservation Strategy. Any access to private land in order to complete an investigation shall require the permission of the land owner. The investigation and reporting to the Service may be accomplished through the cooperative efforts of the Jaguar Conservation Team.

4b. WS shall cooperate with the Service and, if possible, the Jaguar Conservation Team and appropriate wildlife agency to investigate any reports of jaguars in occupied range. The investigation and reporting to the Service may be accomplished through the cooperative efforts of the Jaguar Conservation Team.

4c. A detailed report of any jaguar observation investigation conducted by WS shall be provided to the Service and the Jaguar Conservation Team within 30 days of the occurrence of each incident.

4d. An annual monitoring report shall be submitted to the Service by December 31 of each year covering the previous fiscal year (October through September), detailing any and all predator damage control activities conducted within occupied habitat of the jaguar.

The following term and condition implements reasonable and prudent measure number five:

5a. All WS employees who conduct predator damage management activities within occupied range of the jaguar shall be trained by experienced personnel to identify jaguars and jaguar sign, on procedures for recording and reporting jaguar observations, on appropriate release

techniques for jaguars which may be caught in snares or traps, and on identification of livestock depredations that may be caused by jaguars. Training will be conducted in coordination, if possible, with the appropriate State wildlife agency and Jaguar Conservation Team. Updated training will be conducted as new information on the jaguar becomes available.

The Service believes that not more than one jaguar will be incidentally taken as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. With the implementation of the terms and conditions contained in this biological opinion, the Service does not expect that WS activities will result in mortality of the jaguar. If, during the course of the action, the permitted level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of listed species. Conservation recommendations are discretionary agency activities to minimize or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information on listed species. The conservation recommendation provided here does not necessarily represent complete fulfillment of the agency's section 2(c) or 7(a)(1) responsibilities for the jaguar. In furtherance of the purposes of the Act, we recommend implementing the following action:

1. The Service recommends that WS fund and/or carry out research in cooperation with the Jaguar Conservation Team to: (1) determine the distribution of jaguar habitat within the Southwestern United States, and (2) determine the possible or actual distribution of jaguars within that habitat.

2. WS continues active participation on the Jaguar Conservation Team.

3. WS seek opportunities to promote conservation of the jaguar through dissemination of information materials for WS agents, management agencies, and the public.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitat, the Service requests notification of implementation of any conservation actions.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the request for consultation. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any activities causing such take must cease pending reinitiation.

Thank you for your efforts in conserving listed species. For further information, please contact Bill Austin or Bruce Palmer. Please refer to consultation number 2-21-04-I-4RO in future correspondence concerning this project.

Sincerely,

/s/ David L. Harlow
Field Supervisor

Attachment

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (GARD-AZ/NM)
Field Supervisor, New Mexico Ecological Services Field Office, Albuquerque, NM
Field Supervisor, Ecological Services Field Office, Corpus Christi, TX
Director, Arizona Game and Fish Department, Phoenix, AZ
Director, New Mexico Department of Game and Fish, Sante Fe, NM
Executive Director, Texas Parks and Wilflife Department, Austin, TX

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